

Application No.: 10/643,859

Docket No.: V9661.0075

JFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Chui-Pong J. Liu

Allowed: November 18, 2004

Application No.: 10/643,859

Confirmation No.: 6307

Filed: August 19, 2003

Art Unit: 2838

For: APPARATUS FOR NOISE CURRENT
REDUCTION IN POWER CONVERTERS

Examiner: J. L. Sterrett

Applicants received a Notice of Allowance dated November 18, 2004.

Upon review of the Notice of Allowance, Applicants note that the domestic priority applications have not been acknowledged.

Applicants respectfully request that a Supplemental Notice of Allowance be issued acknowledging the incorporation by reference of the contents of U.S. application No. 10/308,994, , which is a continuation of U.S. application No. 09/939,068, now U.S. Patent No. 6,490,181 (copy enclosed).

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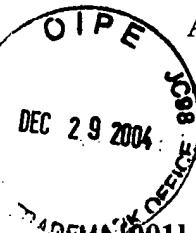
Dated: December 23, 2004

Respectfully submitted,

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APPARATUS FOR NOISE CURRENT REDUCTION IN POWER CONVERTERS

CROSS-REFERENCE TO RELATED APPLICATIONS

[001] This application is continuation-in-part of the United States Patent Application Serial No. 10/308,994 filed on December 2, 2002, now abandoned, which is a continuation of United States Patent Application Serial No. 09/939,068 filed on August 24, 2001, which issued as United States Patent No. 6,490,181.

FIELD OF THE INVENTION

[002] This invention relates to the field of power converters, and in particular to reducing noise due to generation of Electromagnetic Interference by power converters.

BACKGROUND OF THE INVENTION

[003] A power converter provides power by converting power from a source into a form suitable for a load of interest. For instance, a power converter can provide DC power from an AC source. An acceptable commercially viable power converter needs to ensure that the Electromagnetic Interference (EMI) generated by its operation does not exceed acceptable levels. While there are many mechanisms responsible for the generation of EMI, a well-known component of EMI is common mode noise. A switching power converter generates common mode noise as a result of the switching operations in the presence of a low impedance path to ground. Typically, common mode noise due to common mode current flow makes up a significant fraction of the electromagnetic interference (EMI) generated by a switching power converter.

[004] In a switching power converter, the switching circuit receives input power from the input terminals and then produces a switching waveform across the main transformer. The switching waveform so produced is coupled through inter-winding capacitance as well as secondary winding to the secondary side. This secondary winding feeds power to the rectifying circuit which in turn produces power to the load.

[005] In addition to the above described power distribution, there is a path for common mode current responsible for the common mode noise. Switching operations generate noise, which is coupled through transformer inter-winding capacitance to the secondary side. In general the load is isolated from earth but it has fairly high capacitance coupled to earth. This